

IN THE CLAIMS

1 1. A programming circuit for controlling a control circuit of a voltage generator
2 system, wherein the programming circuit comprises:
3 means for receiving at least one input control signal;
4 means for processing the at least one input control signal using at least a
5 series of bias stages;
6 means for generating at least one output control signal using at least a
7 signal outputted by the series of bias stages; and
8 means for outputting the at least one output control signal to the control
9 circuit of the voltage generator system for controlling the control circuit in accordance
10 with the at least one input control signal.

1 2. The programming circuit according to claim 1, wherein the control circuit
2 of the voltage generator system includes a limiter circuit and an oscillator circuit, and the
3 output control signal controls at least one of the limiter circuit and the oscillator circuit.

1 3. The programming circuit according to claim 1, wherein a first input
2 control signal of the at least one input control signal is configured for generating a first
3 output control signal of the at least one output control signal for controlling the limiter
4 circuit of the control circuit and a second input control signal of the at least one input
5 control signal is configured for generating a second output control signal of the at least
6 one output control signal for controlling an oscillator circuit of the control circuit.

1 4. The programming circuit according to claim 3, wherein the means for
2 processing the at least one input control signal includes a first means for processing the
3 first input control signal and a second means for processing the second input control
4 signal.

1 5. The programming circuit according to claim 4, wherein the first output
2 control signal is output by the first means for processing, and the second output control
3 signal is output by the second means for processing.

1 6. The programming circuit according to claim 3, wherein the first input
2 control signal is configured for indicating a target output voltage for the voltage generator
3 system.

1 7. The programming circuit according to claim 6, wherein the limiter circuit
2 includes circuitry for determining when the output voltage of the voltage generator
3 system has reached the target output voltage indicated by the input signal, and upon a
4 positive determination, the circuitry sends a third output control signal to the oscillator
5 circuit to disable the oscillator circuit.

1 8. The programming circuit according to claim 7, wherein upon the positive
2 determination, the circuitry sends the third output control signal to a charge pump of the
3 voltage generator system to disable the charge pump.

1 9. The programming circuit according to claim 3, wherein the second input
2 control signal is configured for indicating a pumping speed for the oscillator circuit.

1 10. The programming circuit according to claim 1, wherein the means for
2 processing the at least one input control signal include means for converting each of the
3 at least one input control signal into at least one binary signal, and means for providing a
4 portion of the at least one binary signal to a bias stage of the series of bias stages for
5 producing current bias of the at least one binary signal by a predetermined current bias.

1 11. The programming circuit according to claim 1, wherein the means for
2 processing the at least one input control signal processes a coarse component signal and a
3 fine component signal of the at least one input control signal.

1 12. The programming circuit according to claim 1, wherein the at least one
2 input control signal is received from a processor.

1 13. The programming circuit according to claim 12, wherein the processor is a
2 Built-In-Self Test (BIST) unit for testing the voltage generator system.

1 14. The programming circuit according to claim 7, wherein the first output
2 control signal is provided to a gate of a MOS transistor functioning as a current bias of
3 the limiter circuit, and the third output control signal is output from a comparator
4 comparing a voltage level of a Voltage Reference signal and a voltage level of a voltage

1 generated from a node of a resistor chain through which a current produced by the current
2 bias passes.

1 15. The programming circuit according to claim 10, wherein the
2 predetermined current bias of each bias stage of the series of bias stages is the product of
3 a constant and two raised to a predetermined power.

1 16. A programmable DC voltage generator system having at least one voltage
2 generator system, said at least one voltage generator system comprising:
3 means for receiving at least one input control signal;
4 means for processing the at least one input control signal using at least a
5 series of bias stages;
6 means for generating at least one output control signal using at least a
7 signal outputted by the series of bias stages; and
8 means for outputting the at least one output control signal to the control
9 circuit of the voltage generator system for controlling the control circuit in accordance
10 with the at least one input control signal.

1 17. The system according to claim 16, wherein the control circuit of the
2 voltage generator system includes a limiter circuit and an oscillator circuit, and the output
3 control signal controls at least one of the limiter circuit and the oscillator circuit.

1 18. The system according to claim 16, wherein a first input control signal of
2 the at least one input control signal is configured for generating a first output control
3 signal of the at least one output control signal for controlling the limiter circuit of the
4 control circuit and a second input control signal of the at least one input control signal is
5 configured for generating a second output control signal of the at least one output control
6 signal for controlling an oscillator circuit of the control circuit.

1 19. The system according to claim 18, wherein the means for processing the at
2 least one input control signal includes a first means for processing the first input control
3 signal and a second means for processing the second input control signal.

1 20. The system according to claim 19, wherein the first output control signal
2 is output by the first means for processing, and the second output control signal is output
3 by the second means for processing.

1 21. The system according to claim 18, wherein the first input control signal is
2 configured for indicating a target output voltage for the voltage generator system.

1 22. The system according to claim 21, wherein the limiter circuit includes
2 circuitry for determining when the output voltage of the voltage generator system has
3 reached the target output voltage indicated by the input signal, and upon a positive

1 determination, the circuitry sends the signal to the oscillator circuit to disable the
2 oscillator circuit.

1 23. The system according to claim 22, wherein upon the positive
2 determination, the circuitry sends the signal to a charge pump of the voltage generator
3 system to disable the charge pump.

1 24. The system according to claim 18, wherein the second input control signal
2 is configured for indicating a pumping speed for the oscillator circuit.

1 25. The system according to claim 16, wherein the means for processing the at
2 least one input control signal include means for converting the at least one input control
3 signal into at least one binary signal, and means for providing a portion of the at least one
4 binary signal to a bias stage of the series of bias stages for producing current bias of the at
5 least one binary signal by a predetermined current bias.

1 26. The system according to claim 16, wherein the means for processing the at
2 least one input control signal processes a coarse component signal and a fine component
3 signal of the at least one input control signal.

1 27. The system according to claim 16, wherein the at least one input control
2 signal is received from a processor.

1 28. The system according to claim 27, wherein the processor is a Built-In-Self
2 Test (BIST) unit for testing the voltage generator system.

1 29. A programming circuit for controlling a control circuit of a voltage
2 generator system, wherein the programming circuit comprises:
3 means for receiving an input control signal having a value selectable from
4 a range of values, wherein the input control signal is generated external to the voltage
5 generator system;
6 means for processing the input control signal; and
7 means for generating an output control signal to the control circuit of the
8 voltage generator system for controlling the control circuit in accordance with the input
9 control signal.

1 30. The programming circuit according to claim 29, wherein the means for
2 processing the input control signal includes a series of bias stages.

1 31. The programming circuit according to claim 29, wherein the input control
2 signal is configured for indicating at least one of a target output voltage for the voltage
3 generator system and a pumping speed for the oscillator circuit.

1 32. The programming circuit according to claim 31, wherein the control
2 circuit of the voltage generator system includes a limiter circuit and an oscillator circuit,
3 and the output control signal controls at least one of the limiter circuit for disabling the

- 1 oscillator circuit upon reaching the target output voltage, and the oscillator circuit for
- 2 controlling the pumping speed of the oscillator circuit.

- 1 33. The programming circuit according to Claim 29, wherein the voltage
- 2 generator system outputs at least one output voltage having a varying voltage level in
- 3 accordance with the input control signal, for use in different operational modes and test
- 4 modes.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50